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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/784,826 | 02/24/2004 | Hajime Maki | Q79934 | 8486 |

23373 7590 04/06/2007

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| EXAMINER | |
|---|---|
| VANOY, TIMOTHY C | |
| ART UNIT | PAPER NUMBER |
| 1754 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 04/06/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/784,826 | MAKI ET AL. | |
| | Examiner | Art Unit | |
| | Timothy C. Vanoy | 1754 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *2-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5* is/are allowed.

6)☒ Claim(s) *2-4 and 6-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Mar. 22, 2007 has been entered.

### *Priority*

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2-4, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by the article titled "Nanocorundum – Advanced Synthesis and Processing" by Krell et al.

In the paragraph bridging pgs. 1142 and 1143 in the Krell reference, there is taught the addition of diaspore seed crystals to a 1 M aqueous solution of aluminum

nitrate; this seeded precursor solution was freeze dried, and then calcined for one hour at 850 °C, in the manner set forth in at least applicants' claims 2, 3, 4, 6 and 7.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-4 and 6-9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the article titled "Nanocorundum – Advanced Synthesis and Processing" by Krell et al.

In the paragraph bridging pgs. 1142 and 1143 in the Krell reference, there is taught the addition of diaspore seed crystals to a 1 M aqueous solution of aluminum nitrate; this seeded precursor solution was freeze dried, and then calcined for one hour at 850 °C, in the manner set forth in at least applicants' claims 2, 3, 4, 6 and 7.

The difference between the applicants' claims and the Krell et al. article is that applicants' claims 8 and 9 describe the specific surface area of the seed crystals.

The seed crystals that the applicants are using and Krell et al. are using are the same: diaspore (please compare the example set forth in figure 2(c) on pg. 1146 in the Krell et al. article with applicants' claim 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to further describe the surface area of the seed crystals, as set forth in applicants' claims 8 and 9, because the applicants and Krell et al. are using the same seed crystals, namely diaspore: please compare the example set forth in figure 2(c) on pg. 1146 in the Krell et al. article with applicants' claim 7. The same diaspore will inherently have the same surface area. Since this difference is inherently met in the process of the Krell et al. article, then these claims are rejected under 35USC102 – as well as 35USC103.

***Double Patenting***

Claims 2-9 are directed to an invention not patentably distinct from claims 1-14 of commonly assigned 11-079,163. Specifically, the claims of both 10-784,826 and 11-079,163 disclose obvious variations of the same method for producing alpha alumina by mixing an aluminum compound with seed crystals and calcining the mixture.

The difference between the claims of 10-784,826 and 11-079,163 is that claim 1 in 11-079,163 further describes the seed crystals as having a full width at half maximum of the main peak in the XRD pattern.

Claim 3 in 11-079,163 sets forth that the metal compound that forms the seed crystals may be alpha $Al_2O_3$, alpha $Fe_2O_3$, alpha $Cr_2O_3$ or diaspore.

Claim 7 in 10-784,826 sets forth that the seed crystals may be alpha $Al_2O_3$, diaspore, iron oxide, chromium oxide or titanium oxide.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to further describe the XRD pattern characteristics of the seed crystals, as set forth in claim 1 in 11-079,163, because a comparison of claim 3 in 11-079,163 to claim 7 in 10-784,826 reveals that both 11-079,163 and 10-784,826 are using the same seed crystals, and the same seed crystals will inherently have the same XRD pattern characteristics as those set forth in claim 1 in 11-079,163.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned 11-079,163, discussed above, would form the

basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

***Response to Arguments***

Applicants' arguments submitted in the response filed Sept. 1, 2006 have been fully considered but they are not persuasive.

a) *The applicants argue that Krell fails to describe or suggest an aluminum salt. The seeded precursor discloses in Krell is not an aluminum salt. The hydrolysis of aluminum nitrate results in aluminum hydroxide, which is not an aluminum salt. In this regard, the seeded precursor disclosed in Krell is not an aluminum salt. Krell fails to suggest the elimination of the hydrolysis of the aluminum nitrate.*

The argument is not persuasive because Krell's hydrolysis is only a partial hydrolysis (please see pg. 1143 line 1 in the Krell et al. article). It would seem that a

partial hydrolysis of the aluminum nitrate is not going to result in a complete conversion of the aluminum nitrate into aluminum hydroxide, but would rather result in a salt that contains combination of hydroxide and nitrate moities. Perhaps something similar to the $Al_2(OH)_5Cl$ . 2 . . .$3H_2O$ mentioned on pg. 1141, 2nd full paragraph in the Krell et al. article (but containing nitrate moieties). The scope of applicants' claim 1 is broad enough to embrace this partial hydrolysis mentioned in the Krell et al. article. It appears that Krell et al. calcine a partially-hydrolyzed aluminum salt. Hence, the rejections are maintained.

b) The applicants' terminal disclaimer has been approved by the Patent Office. However, the applicants are still required to either show that the conflicting inventions (i. e. the inventions of 10-784,826 and 11-079,163) were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

Applicants' arguments submitted with the Amendment filed on Mar. 22, 2007 have been fully considered but they are not persuasive.

a) *The applicants argue that the Krell fails to describe or suggest the mixture recited in (instant) claim 2. Krell discloses partially hydrolyzing the solution before calcining the seeded precursor. In this regard, Krell fails to describe or suggest a mixture provided by a method in which the aluminum salt is added to a solvent to obtain a solution or slurry, the seed crystal is added to said solution or slurry and the solvent is removed.*

In the paragraph bridging pgs. 1142 and 1143 in the Krell reference, there is taught the addition of diaspore seed crystals to a 1 M aqueous solution of aluminum nitrate; this seeded precursor solution was freeze dried, and then calcined for one hour at 850 °C, in the manner set forth in at least applicants' claims 2, 3, 4, 6 and 7.

b) *The applicants argue that Krell fails to provide the motivation to replace the seeded precursor thereof with the claimed mixture.*

The applicants' claimed mixture appears to be the same as Krell's seeded precursor.

c) *The applicants argue that Krell fails to suggest eliminating the hydrolysis of aluminum nitrate.*

The "comprising" scope of the applicants' independent claim embraces this same hydrolysis taught in Krell.

d) *The applicants note that while the examiner asserts that the terminal disclaimer is approved, the applicants are still required to show common ownership of the conflicting inventions in connection with the non-statutory type double patenting rejection. Applicants respectfully submit that the terminal disclaimer avoids the non-statutory type double patenting rejection.*

The applicants' terminal disclaimer has overcome the non-statutory type double patenting rejection, however the conflicting application may possibly still be used in a 103(a) rejection if the conflicting application is available as prior art under either 35USC102(f) or 35USC102(g). To avoid the use of the conflicting application under this type of 103(a) rejection, the applicants are still required to either show that the

conflicting inventions (i. e. the inventions of 10-784,826 and 11-079,163) were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy C Vanoy
Primary Examiner
Art Unit 1754

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